

GP

```
/*  
 * lab1.c  
 *  
 * Created on: Oct 2, 2017  
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 */
```

```
#include <avr/io.h>  
#include <util/delay.h>
```

```
int main(void) {
```

```
    // Set up timer  
    TCCR1B |= (1 << CS10);
```

```
    // Define Output Pins  
    DDRD |= (1 << PD2);  
    DDRD |= (1 << PD3);  
    DDRD |= (1 << PD4);  
    DDRD |= (1 << PD5);  
    DDRD |= (1 << PD6);  
    DDRD |= (1 << PD7);
```

```
    char state = 0;  
    float timerCount = 0;
```

```
    while (1) {
```

```
        // Count how many times the  
        timer reaches 16000 cycles and count  
        0.001s
```

```
        // since the microcontroller has  
        a 16MHz timer
```

```
        if (TCNT1 >= 16000) {  
            timerCount += 0.001;
```

```
            TCNT1 = 0; // Reset timer value  
        }
```

```
    // STATE MACHINE
```

```
    if (state == 0 && timerCount >= 15) {  
        state = 1;  
        timerCount = 0; // Reset counter  
    }
```

```
    if (state == 1 && timerCount >= 2) {  
        state = 2;  
        timerCount = 0;  
    }
```

```
    if (state == 2 && timerCount >= 2) {  
        state = 3;  
        timerCount = 0;  
    }
```

```
    if (state == 3 && timerCount >= 15) {  
        state = 4;  
        timerCount = 0;  
    }
```

```
    if (state == 4 && timerCount >= 2) {  
        state = 5;  
        timerCount = 0;  
    }
```

```
    if (state == 5 && timerCount >= 2) {  
        state = 0;  
        timerCount = 0;  
    }
```

```
    // Set Output's values
```

```
    if (state == 0) {  
        PORTD &= ~(1 << PD3);  
        PORTD &= ~(1 << PD4);  
        PORTD &= ~(1 << PD6);
```

```

        PORTD &= ~(1 << PD7);
        PORTD |= (1 << PD5);
        PORTD |= (1 << PD4);
    } else if (state == 1) {
        PORTD &= ~(1 << PD2);
        PORTD &= ~(1 << PD3);
        PORTD &= ~(1 << PD5);
        PORTD &= ~(1 << PD7);
        PORTD |= (1 << PD4);
        PORTD |= (1 << PD6);
    } else if (state == 2) {
        PORTD &= ~(1 << PD2);
        PORTD &= ~(1 << PD3);
        PORTD &= ~(1 << PD4);
        PORTD &= ~(1 << PD6);
        PORTD |= (1 << PD4);
        PORTD |= (1 << PD7);
    } else if (state == 3) {
        PORTD &= ~(1 << PD3);
        PORTD &= ~(1 << PD4);
        PORTD &= ~(1 << PD5);
        PORTD &= ~(1 << PD6);
        PORTD |= (1 << PD2);
        PORTD |= (1 << PD7);
    } else if (state == 4) {
        PORTD &= ~(1 << PD2);
        PORTD &= ~(1 << PD4);
        PORTD &= ~(1 << PD5);
        PORTD &= ~(1 << PD6);
        PORTD |= (1 << PD3);
        PORTD |= (1 << PD7);
    } else if (state == 5) {
        PORTD &= ~(1 << PD2);
        PORTD &= ~(1 << PD3);
        PORTD &= ~(1 << PD5);
        PORTD &= ~(1 << PD6);
        PORTD |= (1 << PD4);
        PORTD |= (1 << PD7);
    }
}

```

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